

Appl. No. : 09/782,588  
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AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A composition for performing a first assay at a first assay location, and a second assay at a second assay location, comprising:

- a) a substrate with a surface comprising first and second assay locations separated from each other by a partition, wherein said assay locations have discrete sites configured to hold a single microsphere, said sites separated by a distance of less than 50  $\mu\text{m}$ ; and wherein said substrate comprises the dimensions of a microscope slide;
- b) a population of microspheres comprising at least a first and a second subpopulation, wherein said first subpopulation comprises a first bioactive agent and said second subpopulation comprises a second bioactive agent, wherein said microspheres are randomly distributed at said discrete sites on said surface; and
- c) a lid in communication with said partition, wherein a first hybridization chamber is formed at said first assay location, and a second hybridization chamber is formed at said second assay location.

2. (Previously Presented) The composition according to claim 1, wherein said sites are separated by a distance of less than 25  $\mu\text{m}$ .

3. (Previously Presented) The composition according to claim 1, wherein said sites are separated by a distance of less than 15  $\mu\text{m}$ .

4. (Previously Presented) The composition according to claim 1, 2 or 3, wherein said sites are separated by a distance of at least about 5  $\mu\text{m}$ .

5. (Canceled).

6. (Previously presented) The composition according to claim 1, wherein the distance between centers of a first and second microsphere of said first subpopulation is at least 5  $\mu\text{m}$ .

7. (Previously Presented) The composition according to claim 6, wherein the distance between said first and second microsphere of said first subpopulation is less than about 100  $\mu\text{m}$ .

8. (Canceled)

9. (Canceled)

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10. (Previously Presented) The composition according to claim 7, wherein the distance between a first and second microsphere of said first subpopulation is less than about 50  $\mu\text{m}$ .

11. (Previously Presented) The composition according to claim 7, wherein the distance between a first and second microsphere of said first subpopulation is less than about 15  $\mu\text{m}$ .

12. (Previously Presented) The composition according to claim 7, 10 or 11, wherein the distance between said first and second microsphere of said first subpopulation is at least about 5  $\mu\text{m}$ .

Claims 13-17 (Canceled).

18. (Previously Presented) A method for making a composition for performing a first assay at a first assay location, and a second assay at a second assay location comprising:

- a) providing a substrate with a surface comprising first and second assay locations separated from each other by a partition, wherein said assay locations have discrete sites configured to hold a single microsphere, said sites separated by a distance of less than 50  $\mu\text{m}$ , and wherein said substrate comprises the dimensions of a microscope slide;
- b) randomly distributing a population of microspheres comprising at least a first and a second subpopulation at said discrete sites, wherein said first subpopulation comprises a first bioactive agent and said second subpopulation comprises a second bioactive agent; and
- c) placing a lid in communication with said partition, wherein a first hybridization chamber is formed at first assay location, and a second hybridization chamber is formed at said second assay location.

19. (Previously Presented) The method according to claim 18, wherein said discrete sites are separated by a distance of less than 25  $\mu\text{m}$ .

20. (Previously Presented) The method according to claim 18, wherein said discrete sites are separated by a distance of less than 15  $\mu\text{m}$ .

21. (Previously presented) The method according to claim 18, wherein the ratio of said first and said second subpopulation is at least 1 : 36.

22. (Previously presented) The method according to claim 18, wherein the ratio of said first and said second subpopulation is at least 1 : 100.

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23. (Previously presented) The method according to claim 18, wherein the distance between the centers of a first and second microsphere of said first subpopulation is at least 5  $\mu\text{m}$ .

24. (Previously presented) The method according to claim 18, wherein the distance between the centers of a first and second microsphere of said first subpopulation is at least 15  $\mu\text{m}$ .

25. (Previously presented) The method according to claim 18, wherein the distance between a first and second microsphere of said first subpopulation is at least 50  $\mu\text{m}$ .

26. (Canceled)

27. (Previously presented) The method according to claim 18, wherein said discrete sites are wells.

28. (Currently Amended) A composition for performing a plurality of assays on a substrate, comprising:

a) a substrate having a surface comprising a first assay location comprising a first population of microspheres and a second assay location comprising a second population of microspheres, wherein said microspheres are located in discrete sites configured to hold a single microsphere;

b) a partition separating said first assay location from said second assay location such that reagents applied to said first assay location do not contact said second assay location; and

c) a lid in communication with said partition, wherein a first hybridization chamber is formed at said first assay location and a second hybridization chamber is formed at said second assay location.

29. (Previously Presented) The composition of Claim 28, comprising a sealant configured to seal said lid to said substrate.

30. (Previously Presented) The composition of Claim 28, wherein said partition comprises a gasket.

31. (Previously Presented) The composition of Claim 30, wherein said partition comprises rubber or silicon.

32. (Previously Presented) The composition of Claim 30, wherein said gasket is adapted to fit within an indentation or channel on the substrate.

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33. (Previously Presented) The composition of Claim 28, further comprising a film disposed between said lid and said partition.